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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/051,687 | 10/10/2000 | Pierre A. Humblet | CX097033P01 | 8289 |

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06/16/2004

Motorola Inc
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| EXAMINER |
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MEEK, JACOB M

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| ART UNIT | PAPER NUMBER |
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2631

DATE MAILED: 06/16/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/051,687

Applicant(s)

HUMBLET, PIERRE A.

Examiner

Jacob Meek

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d).

Specification

2. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.
3. The disclosure is objected to because of the following informalities: each section of the disclosure should include a heading, and should be arranged as defined below.

Appropriate correction is required.

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).

(j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

4. Claims 1 - 12 are objected to because of the following informalities: Claims section should start with a statement such as – what is claimed is – or – what we claim is-. Claims 1 – 12 are objected to as lacking transition clause such as comprising, consisting of.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blackwell in view of Ayanoglu.

With regard to Claim 1 Blackwell teaches a device for communications from a digital adapter (See Figure 8, references 228, 318, 418, 408, 416, 412, 422, and 420) linked to an exchange by means of a digital interface (ISDN, see abstract) and an analog adapter linked to an exchange by means of an analog interface (See Figure 8, references 126, 306, 314, 414, 412, 422, and 420), said exchanges linked by means of a telecommunication network (See Figure 2, references 222, 260, 261, 228, 126, 120, and 104). Blackwell fails to teach the means to directly link the digital adapter to the analog adapter without emulating an analog signal. Ayanoglu teaches the methodology for implementing a high-speed analog modem (Column 3, lines 23 – 42) by encoding the digital information in such a way as to be represented by discrete analog signal levels. It would have been obvious to one of ordinary skill in the art at the time of

invention by applicant to modify Blackwell's system by using the modulation scheme as taught by Ayanoglu to devise a system that would provide the ability to support a higher speed analog connection (48 kb/s) than supported by existing techniques (<30 kb/s).

With regard to Claim 2 teachings and limitations are stated in claim 1 with the addition of a digital transmitter situated in the digital adapter (See figure 9, reference numbers 504, 505, 508, 518, 228) and able to transmit to an analog receiver situated in the analog adapter (See figure 9, reference numbers 126, 514, 512, 510, 508, 505, 504). Ayanoglu teaches the method of encoding data in such a way as to utilize quantitized voltage levels to directly represent data (column 5, lines 30 – 45). Motivation to combine is discussed above in claim 1.

With regard to claim 7, teachings and limitations are taught as in Claims 1 and 2 with the addition of combining an n-level (64) selector with an N-level (256) selector to provide a means of quantitizing transmit data. Ayanoglu teaches the concept (Column 9, lines 5 – 32) of an n-level (64) to N-level (256) selector, and also teaches the means for doing so (see Figure 7, and column 11, lines 21 – 42). Motivation to combine is discussed above in claim 1.

6. Claims 3, 8, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blackwell in view of Ayanoglu in further view of Herzberg.

With regard to Claim 3 teachings and limitations are stated in claim 1 with the addition of an analog transmitter situated in the analog adapter (See figure 9, reference numbers 504, 505, 508, 510, 512, 514, 126) able to transmit to a digital receiver located in the digital adapter (See figure 9, reference numbers 228, 518, 508, 505, 504). Herzberg teaches that echo from digital network to analog network must be addressed with echo cancellation (See Figure 9, reference 14, 52, 53, 55 and Column 4 lines 65 – 67, column 5 lines 1 – 4), and discloses that it should be possible to provide a direct connection to the digital network (Column 2, lines 60 – 65) without disclosing specific method. It would have been obvious to one of ordinary skill in the art at the

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time of invention by applicant to modify Blackwell's system with a QLS modulation scheme as taught by Herzberg utilizing an encoding scheme in conjunction with echo cancellation to facilitate high speed analog communications.

With regard to Claim 8, teachings and limitations are stated in claim 3 with the addition of transmit coding scheme. Ayanoglu teaches the basis for transmit coding (See Column 7, lines 5 – 63, Figures 4 and 5). Motivation to combine is discussed above in claim 3.

With regard to Claim 9, teachings and limitations are stated in claims 3 and 8 with the addition of adaptive transmit equalization. Ayanoglu teaches the basis for adaptive transmit equalization (See Column 10, lines 43 – 67; Column 11, lines 1 – 20; Figure 6). Motivation to combine is discussed above in claim 3.

With regard to Claim 10, teachings and limitations are stated in claim 3 with the addition of an echo filter connected to a decoder. Herzberg teaches that echo from digital network to analog network must be addressed with echo cancellation in the digital portion of the network (See Figure 9, reference 14, 13, 20, 60). Motivation to combine is discussed above in claim 3.

7. Claims 4, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blackwell in view of Ayanoglu in further view of Eyuboglu.

With regard to Claim 4 teachings and limitations are taught as in Claims 1 and 2 with the addition of an adaptive linear equalizer connected at its input to the output of the analog to digital converter, and connected at its output to an output equalizer linked to the user equipment so that the response at the output of the equalizer is a partial response, in particular a Class IV response. Eyuboglu teaches a mapping a digital data sequence into a signal point sequence for data transmission over a channel characterized by a non-ideal response. Eyuboglu's receiver consists of an A/D converter connected to an adaptive equalizer (See Figure 8, references 109, 108, 110). It would have been obvious to one of ordinary skill in the art at the time of invention

by applicant to modify Blackwell's system with a receiver design as taught by Eyuboglu to improve the noise performance of the system in view of the fact that adaptive equalization used in conjunction with an error correction technique is a standard part of modern modem design.

With regard to Claim 5, teachings and limitations are stated in claim 4. Eyuboglu also teaches the use of partial response signaling (Column 2, lines 61 – 77 and Column 3, lines 1 – 5). Motivation to combine is discussed above in claim 4.

With regard to Claim 6, teachings and limitations are stated in claim 4 and 5. Eyuboglu teaches a receiver using a Viterbi decoder (See Figure 8, reference 133). Motivation to combine is discussed above in claim 4.

8. Claim 11 rejected under 35 U.S.C. 103(a) as being unpatentable over Blackwell in view of Herzberg over Ayanoglu.

Blackwell teaches a device wherein direct link means include in the direction of transmission going from the digital adapter to the analog adapter a digital transmitter situated in the digital adapter (See Figure 9, reference numbers 504, 505, 508, 518, 228) and able to transmit to an analog receiver situated in the analog adapter (See Figure 9, reference numbers 126, 514, 512, 510, 508, 505, 504). Blackwell fails to teach the how to encode the digital information into analog pulses the voltages levels of which represent the information transmitted from the digital adapter to the analog adapter. Ayanoglu teaches the methodology for implementing a high-speed analog modem using discrete analog values for the representation of digital information (Column 2, lines 39 – 55). Ayanoglu also describes the 6 bit to 8 bit selection process as part of the operation of his device (Column 9, lines 5 – 32). Herzberg discloses that his system (Column 2, lines 60 – 65) would allow a system that would not require an analog modem at the remote end, that is to say a direct digital link could be accommodated. It would have been obvious to one of ordinary skill in the art at the time of invention by applicant

to modify Blackwell's system by using a QLS modulation scheme as taught by Herzberg and Ayanoglu to devise a system that would provide the ability to support a higher speed analog connection (48 kb/s) than supported by existing techniques (<30 kb/s).

9. Claim 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Blackwell in view of Herzberg over Ayanoglu.

Blackwell teaches a device wherein direct link means include in the direction of transmission going from the analog adapter to the digital adapter an analog transmitter situated in the analog adapter (See figure 9, reference numbers 504, 505, 508, 510, 512, 514, 126) and able to transmit to a digital receiver located in the digital adapter (See figure 9, reference numbers 228, 518, 508, 505, 504). Blackwell and Ayanoglu fail to teach how to an analog signal such that when it is sampled it will equate the sum of a value able to be determined by the digital information item transmitted by the analog adapter to the digital adapter and the echo of the signal transmitted by the digital adapter without said value having to be equal to a level of the quantization law. Herzberg teaches that echo from digital network to analog network must be addressed with echo cancellation (See Figure 9, reference 14, 52, 53, 55) and with decoding to mitigate errors introduced by the network. Herzberg discloses that it should be possible to provide a direct connection to the digital network (Column 2, lines 60 – 65). It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify Blackwell's system with a QLS modulation scheme as taught by Herzberg utilizing an encoding scheme in conjunction with echo cancellation to facilitate high speed analog communications.

Conclusion


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. These references should be reviewed and claims narrowed based on the knowledge disclosed by the prior art. Any inquiry concerning this communication or earlier communications

from the examiner should be directed to Jacob Meek whose telephone number is (703) 305-8953. The examiner can normally be reached on 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (703) 306-3034. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JM



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